

WHAT IS CLAIMED IS:

1. An IEEE 802.3 compliant physical layer device, comprising:
 - a volatile memory for storing configuration information for the IEEE 802.3 compliant physical layer device; and
 - a first signal path between the volatile memory and a system controller, communicating the configuration information for the physical layer device to the volatile memory.
2. The IEEE 802.3 compliant physical layer device according to claim 1, further comprising a second signal path for communicating the configuration information between the volatile memory and at least one non-volatile memory.
3. The IEEE 802.3 compliant physical layer device according to claim 2, further comprising an arbiter for receiving requests to access the volatile memory from the first signal path and the second signal path and giving priority to the first signal path.
4. The IEEE 802.3 compliant physical layer device according to claim 1, wherein the volatile memory comprises a shadow RAM.
5. The IEEE 802.3 compliant physical layer device according to claim 2, wherein the at least one non-volatile memory comprises an EEPROM.
6. The IEEE 802.3 compliant physical layer device according to claim 1, wherein the first signal path further comprises a first bridge.

7. The IEEE 802.3 compliant physical layer device according to claim 2, wherein the second signal path further comprises a second bridge.
8. The IEEE 802.3 compliant physical layer device according to claim 7, further comprising a third bridge for transferring data between the at least one non-volatile memory and the system controller, bypassing the volatile memory.
9. The IEEE 802.3 compliant physical layer device according to claim 8, further comprising a controller, wherein when receiving requests to access the at least one non-volatile memory from both the second bridge and the third bridge, the controller gives priority to the earlier one of the requests.
10. The IEEE 802.3 compliant physical layer device according to claim 2, further comprising a write-only controller for writing the configuration information of the physical layer device from the at least one non-volatile memory.
11. The IEEE 802.3 compliant physical layer device according to claim 10, further comprising a register for storing configuration information for the physical layer device from the at least one non-volatile memory.
12. The IEEE 802.3 compliant physical layer device according to claim 11, further comprising a controller for deciding the configuration time for the physical layer device.
13. The IEEE 802.3 compliant physical layer device according to claim 1, wherein the system controller is a MDC/MDIO system controller.

14. The IEEE 802.3 compliant physical layer device according to claim 1, further comprising a two-wire serial interface.

15. The IEEE 802.3 compliant physical layer device according to claim 1, wherein the volatile memory stores at least two bits for indicating data transfer status.

16. An IEEE 802.3 compliant physical layer device, comprising:
a volatile storing means for storing configuration information for the IEEE 802.3 compliant physical layer device; and
a first means for communicating the configuration information for the IEEE 802.3 compliant physical layer device from a system controlling means to the volatile storing means.

17. The IEEE 802.3 compliant physical layer device according to claim 16, further comprising a second means for communicating the configuration information between at least one non-volatile storing means and the volatile storing means.

18. The IEEE 802.3 compliant physical layer device according to claim 17, further comprising means for receiving requests to access the volatile storing means from the first communicating means and the second communicating means and giving priority to the first communicating means.

19. The IEEE 802.3 compliant physical layer device according to claim 16, wherein the volatile storing means comprises a shadow RAM.

20. The IEEE 802.3 compliant physical layer device according to claim 17, wherein the at least one non-volatile storing means comprises an EEPROM.
21. The IEEE 802.3 compliant physical layer device according to claim 16, wherein the first communicating means further comprises a first bridge.
22. The IEEE 802.3 compliant physical layer device according to claim 17, wherein the second communicating means further comprises a second bridge.
23. The IEEE 802.3 compliant physical layer device according to claim 22, further comprising a third bridge for transferring data between the at least one non-volatile storing means and the system controlling means, bypassing the volatile storing means.
24. The IEEE 802.3 compliant physical layer device according to claim 23, further comprising an access controlling means, wherein when receiving requests to access the at least one non-volatile storing means from both the second bridge and the third bridge, the access controlling means gives priority to the earlier one of the requests.
25. The IEEE 802.3 compliant physical layer device according to claim 17, further comprising a write-only controlling means for writing the configuration information of the physical layer device from the at least one non-volatile storing means.
26. The IEEE 802.3 compliant physical layer device according to claim 25, further comprising a register for storing configuration information for the physical layer device from the at least one non-volatile storing means.

27. The IEEE 802.3 compliant physical layer device according to claim 26, further comprising a controlling means for deciding the configuration time for the physical layer device.

28. The IEEE 802.3 compliant physical layer device according to claim 16, wherein the system controlling means is a MDC/MDIO system controller.

29. The IEEE 802.3 compliant physical layer device according to claim 16, further comprising a two-wire serial interface.

30. The IEEE 802.3 compliant physical layer device according to claim 16, wherein the volatile storing means stores at least two bits for indicating data transfer status.

31. A method for controlling transfer of configuration information of an IEEE 802.3 compliant physical layer device, the method comprising:
writing the configuration information of the IEEE 802.3 compliant physical layer device by a system controller into a volatile memory in the IEEE 802.3 compliant physical layer device.

32. The method according to claim 31, further comprising communicating the configuration information from the volatile memory to at least one non-volatile memory.

33. The method according to claim 32, further comprising receiving requests to access the volatile memory from the system controller and the non-volatile memory, and giving the priority to the system controller.

34. The method according to claim 32, further comprising communicating data between the at least one non-volatile memory and the system controller, bypassing the volatile memory.

35. The method according to claim 32, further comprising receiving requests to access the at least one non-volatile memory from the system controller and the volatile memory, and giving priority to the earlier one of the requests when receiving both.

36. The method according to claim 32, further comprising downloading the configuration information from the at least one non-volatile memory to a write-only controller.

37. The method according to claim 36, further comprising writing the configuration information to at least one register.

38. The method according to claim 31, wherein the data is transferred without identifying a master.

39. The method according to claim 32, further comprising dividing one of the at least one non-volatile memory into a plurality of pages.

40. The method according to claim 32, further comprising indicating data transfer status by bits in the volatile memory.

41. A data transfer system comprising a system controller, and an IEEE 802.3 compliant physical layer device according to claim 1.

42. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 2, and at least one non-volatile memory.
43. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 3, and at least one non-volatile memory.
44. A data transfer system comprising a system controller, and an IEEE 802.3 compliant physical layer device according to claim 4.
45. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 5, and at least one non-volatile memory.
46. A data transfer system comprising a system controller, and an IEEE 802.3 compliant physical layer device according to claim 6.
47. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 7, and at least one non-volatile memory.
48. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 8, and at least one non-volatile memory.
49. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 9, and at least one non-volatile memory.
50. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 10, and at least one non-volatile memory.

51. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 11, and at least one non-volatile memory.
52. A data transfer system comprising a system controller, an IEEE 802.3 compliant physical layer device according to claim 12, and at least one non-volatile memory.
53. A data transfer system comprising a system controller, and an IEEE 802.3 compliant physical layer device according to claim 13.
54. A data transfer system comprising a system controller, and an IEEE 802.3 compliant physical layer device according to claim 14.
55. A data transfer system comprising a system controller, and an IEEE 802.3 compliant physical layer device according to claim 15.
56. A data transfer system comprising a system controlling means, and an IEEE 802.3 compliant physical layer device according to claim 16.
57. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 17, and at least one non-volatile storing means.
58. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 18, and at least one non-volatile storing means.

59. A data transfer system comprising a system controlling means, and an IEEE 802.3 compliant physical layer device according to claim 19.

60. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 20, and at least one non-volatile storing means.

61. A data transfer system comprising a system controlling means, and an IEEE 802.3 compliant physical layer device according to claim 21.

62. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 22, and at least one non-volatile storing means.

63. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 23, and at least one non-volatile storing means.

64. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 24, and at least one non-volatile storing means.

65. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 25, and at least one non-volatile storing means.

66. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 26, and at least one non-volatile storing means.

67. A data transfer system comprising a system controlling means, an IEEE 802.3 compliant physical layer device according to claim 27, and at least one non-volatile storing means.

68. A data transfer system comprising a system controlling means, and an IEEE 802.3 compliant physical layer device according to claim 28.

69. A data transfer system comprising a system controlling means, and an IEEE 802.3 compliant physical layer device according to claim 29.

70. A data transfer system comprising a system controlling means, and an IEEE 802.3 compliant physical layer device according to claim 30.

71. A communications network system comprising:

a plurality of terminal devices;

a network enabling the terminal devices to communicate with each other; and

a plurality of IEEE 802.3 compliant physical layer devices according to claim 1.

72. The communications network system according to claim 71, wherein the IEEE 802.3 compliant physical layer device further comprises a second signal path for

communicating the configuration information between at least one non-volatile memory and the volatile memory.

73. The communications network system according to claim 72, wherein the IEEE 802.3 compliant physical layer device further comprises an arbiter for receiving requests to access the volatile memory from the first signal path and the second signal path and giving priority to the first signal path.

74. The communications network system according to claim 71, wherein the volatile memory comprises a shadow RAM.

75. The communications network system according to claim 72, wherein the at least one non-volatile memory comprises an EEPROM.

76. The communications network system according to claim 71, wherein the first signal path further comprises a first bridge.

77. The communications network system according to claim 72, wherein the second signal path further comprises a second bridge.

78. The communications network system according to claim 72, wherein the IEEE 802.3 compliant physical layer device further comprises a third bridge for transferring data between the at least one non-volatile memory and the system controller, bypassing the volatile memory.

79. The communications network system according to claim 78, wherein the IEEE 802.3 compliant physical layer device further comprises a controller, and wherein when

receiving requests to access the at least one non-volatile memory from both the second bridge and the third bridge, the controller gives priority to the earlier one of the requests.

80. The communications network system according to claim 72, wherein the IEEE 802.3 compliant physical layer device further comprises a write-only controller for writing configuration information of the IEEE 802.3 compliant physical layer device from the at least one non-volatile memory.

81. The communications network system according to claim 80, wherein the IEEE 802.3 compliant physical layer device further comprises a register for storing configuration information for the IEEE 802.3 compliant physical layer device from the at least one non-volatile memory.

82. The communications network system according to claim 81, wherein the physical layer device further comprises a time controller for deciding the configuration time for the physical layer device.

83. The communications network system according to claim 71, wherein the system controller is a MDC/MDIO master.

84. The communications network system according to claim 71, further comprises a two wire serial interface.

85. The communications network system according to claim 71, further comprising a plurality of DCE (Digital Communication Equipment).

86. The communication network system according to claim 71, further comprising a plurality of switches.

87. A communications network system comprising:

a plurality of terminal devices;

a network enabling the terminal devices to communicate with each other; and

a plurality of physical layer devices according to claim 16.

88. The communication network system according to claim 87, wherein the IEEE 802.3 compliant physical layer device further comprises a second means for communicating the configuration information between the volatile storing means and at least one non-volatile storing means.

89. The communication network system according to claim 88, wherein the IEEE 802.3 compliant physical layer device further comprises means for receiving requests to access the volatile memory from the first communicating means and the second communicating means and giving priority to the first communicating means.

90. The communication network system according to claim 87, wherein the volatile storing means comprises a shadow RAM.

91. The communication network system according to claim 88, wherein the at least one non-volatile storing means comprises an EEPROM.

92. The communication network system according to claim 87, wherein the first communicating means further comprises a first bridge.

93. The communication network system according to claim 88, wherein the second communicating means further comprises a second bridge.

94. The communication network system according to claim 88, wherein the IEEE 802.3 compliant physical layer device further comprises a third bridge for transferring the configuration information between the at least one non-volatile storing means and the system controller, bypassing the volatile storing means.

95. The communication network system according to claim 94, wherein the IEEE 802.3 compliant physical layer device further comprises means for controlling access to the at least one non-volatile storing means, and wherein when receiving requests to access the at least one non-volatile storing means from both the second bridge and the third bridge, the controlling means gives priority to the earlier one of the requests.

96. The communication network system according to claim 88, wherein the IEEE 802.3 compliant physical layer device further comprises a write-only controlling means for writing configuration information for the physical layer device from the at least one non-volatile storing means.

97. The communication network system according to claim 96, wherein the IEEE 802.3 compliant physical layer device further comprises means for storing the configuration information from the at least one non-volatile storing means.

98. The communication network system according to claim 97, wherein the IEEE 802.3 compliant physical layer device further comprises means for deciding the configuration time for the physical layer device.

99. The communication network system according to claim 87, wherein the system controller is a MDC/MDIO master.

100. The communication network system according to claim 87, further comprising a two wire serial interface.

101. The communications network system according to claim 87, further comprising a plurality of DCE (Digital Communication Equipment).

102. The communication network system according to claim 87, further comprising a plurality of switches.

103. A GBIC (Gigabit Interface Connector) module having an IEEE 802.3 compliant physical layer device according to claim 1.

104. A GBIC (Gigabit Interface Connector) module having an IEEE 802.3 compliant physical layer device according to claim 16.

105. A XFP (XFP 10 Gigabit small form factor pluggable) module having an IEEE 802.3 compliant physical layer device according to claim 1.

106. A XFP (XFP 10 Gigabit small form factor pluggable) module having an IEEE 802.3 compliant physical layer device according to claim 16.

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107. A SFP (Small Form-factor Pluggable) module having an IEEE 802.3 compliant physical layer device according to claim 1.
108. A SFP (Small Form-factor Pluggable) module having an IEEE 802.3 compliant physical layer device according to claim 16.
109. A laser management control system, comprising:
 - a laser;
 - an IEEE 802.3 compliant physical layer device according to claim 2; and
 - a laser management device coupled between the laser and the bus of the at least one non-volatile memory.
110. A laser management control system, comprising:
 - a laser;
 - an IEEE 802.3 compliant physical layer device according to claim 17; and
 - a laser management device coupled between the laser and the bus of the at least one non-volatile memory.